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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,164	05/13/2002	Hiroyuki Teratani	Q68784	9195
23373	7590	10/21/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			FISCHER, JUSTIN R	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 10/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/070,164

Applicant(s)

TERATANI ET AL.

Examiner

Justin R. Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 8-40 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,12-20,22-29,39 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,5,8-11,21 and 30-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 5, 8-11, 21, 30-32, 34, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corvasce (US 6,202,726, of record) in view of Cohen (US 6,573,324, of record), Halasa (EP 985,554, of record), Yamamoto (US 4,523,618, of record), Wideman (US 5,089,563, of record), and optionally in view of Kitagawa (US 4,835,209, newly cited). As best depicted in Figure 1, Corvasce is directed to a runflat tire construction in which a side reinforcing layer or sidewall insert 8 is arranged at an inner side of the tire and adjacent the carcass, wherein said insert is formed of a styrene-butadiene copolymer (Column 6, Lines 5-10). While the reference only expressly describes the vinyl content for the butadiene monomer, it is well recognized that such a description commonly covers the butadiene as a homopolymer or as a copolymer and as such, one of ordinary skill in the art at the time of the invention would have expected the butadiene portion of the styrene-butadiene copolymer to have a vinyl content between 35 and 90 percent. Cohen evidences this point by expressly describing the same range for the vinyl content of the butadiene in the homopolymer (polybutadiene) and in the copolymer (styrene-butadiene) (Column 4, Lines 15-30).

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Kitagawa is optionally applied to further evidence the description commonly used for the butadiene portion of the polybutadiene and the styrene-butadiene copolymer (Column 3, Lines 62+).

Corvasce, however, is completely silent with respect to the weight average molecular weight and the molecular weight distribution of the insert composition. In any event, the ranges of the claimed invention are broad and are consistent with a wide variety of tire rubber compositions, including sidewall insert compositions, as shown for example by Halasa (Paragraphs 78 and 80)- in this instance, Corvasce and Halasa suggest several of the same base rubber compositions and as such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the runflat insert of Corvasce with a composition satisfying the broad ranges of the claimed invention. Furthermore, the runflat composition of Halasa contains a coupling agent in an analogous manner to the runflat composition of Corvasce (Column 3, Lines 1-7), wherein it is well recognized that the inclusion of such a coupling agent results in compositions having increased weight average molecular weights- see Yamamoto (Column 3, Lines 50-60 and Figures 1-3). It is additionally noted that applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed parameters. Lastly, Wideman is applied to evidence the art recognized use of polymers having a vinyl content below 65% in order to provide acceptable cure characteristics (Column 1, Lines 20-35).

In regards to claim 8, the insert of Corvasce includes a coupling agent (Column 3, Lines 1-7); however, the reference fails to describe the rubber composition as being

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specifically coupled with a tin atom, a nitrogen atom, or a silicon atom. In any event, the technique of coupling (e.g. tin coupling) is extremely well known in the tire industry, particularly in the manufacture of tire treads to achieve improved treadwear and reduced rolling resistance. More recently, though, the concept of coupling, particularly tin coupling, has been used in the manufacture of tire sidewall inserts since it provides reduced hysteresis, improved cold flow characteristics, and better processability, as shown for example by Halasa (Paragraphs 12-18) and Cohen (Column 4, Lines 35-45). It is noted that Cohen describes a preferred embodiment in which at least 50 percent and more preferably between 60 and 85 percent of the tin bonds are bonded to butadiene units (one would expect greater than 40% of the polymer to be coupled as it is defines a broad range that is consistent with tire rubber compositions). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the rubber of Corvasce as a "tin coupled" rubber absent any conclusive showing of unexpected results.

As to claim 10, Cohen recognizes the inclusion of a tin coupling agent at the end of the polymerization reaction, as is common in the rubber industry (Column 4, Lines 35-40).

Regarding claim 11, there are a wide variety of well-known tin coupling agents, perhaps the most common being tetrachloride, as shown for example by Halasa (Paragraph 42).

With respect to claim 21, Halasa suggests that a degree of branching is obtained by using tin tetrahalides (Paragraph 42), which, as noted above, represents one of the most common forms of tin coupling agents.

As to claims 30-32 and 34, Corvasce suggests the use of at least one of carbon black, precipitated silica, and modified carbon black (Column 2, Lines 65+).

3. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corvasce, Cohen, Halasa, Yamamoto, Wideman, and Kitagawa as applied in claim 31 above and further in view of Gorce (US 5,665,812, of record). As noted above, the rubber sidewall insert of Corvasce can include a combination of carbon black and silica. While Corvasce fails to suggest the specific surface area of the silica, the claimed range defines the well-known and extensively used forms of silica in the tire industry. For example, Gorce is directed to a rubber composition useable in the manufacture of tire components, wherein the silica has a specific surface area less than or equal to 450 m<sup>2</sup>/g (Column 9, Lines 10-15), which encompasses the entire range of the claimed invention. It is emphasized that the claimed surface areas are consistent with the common forms of silica used in the tire industry. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include silica having a specific surface area between 50 and 400 m<sup>2</sup>/g in the rubber composition of Corvasce.

4. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corvasce, Cohen, Halasa, Yamamoto, Wideman, and Kitagawa as applied in claim 30 above and further in view of Muraoka (US 5,907,009, of record). As noted above, the

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rubber member or insert of Corvasce includes carbon black. While Corvasce fails to suggest the specific surface area of the carbon black, the claimed range defines the well-known and extensively used forms of carbon black in the tire industry. For example, Muraoka is directed to a rubber composition useable in the manufacture of tire components, wherein the carbon black has a specific surface area between 100 and 200 m<sup>2</sup>/g (Column 5, Lines 55-61), which falls entirely within the range of the claimed invention. It is emphasized that the claimed surface areas are consistent with the common forms of carbon black used in the tire industry. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include carbon black having a specific surface area between 50 and 400 m<sup>2</sup>/g in the rubber composition of Corvasce.

5. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corvasce, Cohen, Halasa, Yamamoto, Wideman, and Kitagawa as applied in claim 3 above and further in view of Matsuo (EP 963,863, of record). In describing the composition of the sidewall insert 8, Corvasce suggests the inclusion of a wide variety of additives, as is well known and conventional in the tire industry (Column 6, Lines 65+). While Corvasce fails to expressly suggest the inclusion of sodium 1,6-hexamethylenedithiosulfate dihydrate, this additive represents a well-known and conventional material that promotes reversion resistance and improves ageing characteristics. For example, Matsuo is directed to a similar runflat tire construction in which sodium 1,6-hexamethylenedithiosulfate dihydrate is included in the insert composition for the benefits detailed above (Page 3, Paragraph 16). Absent any

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conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to incorporate sodium 1,6-hexamethylenedithiosulfate dihydrate into the runflat composition of Corvasce.

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Corvasce, Cohen, Halasa, Yamamoto, Wideman, and Kitagawa and further in view of either one of Nishikawa (US 6,415,840, of record) or Nishikawa (US 6,209,604, of record). As noted above, Corvasce is directed to a runflat tire construction having a sidewall insert formed of a high vinyl polybutadiene. While the reference is silent as to the inclusion of a rubber filament composite in the sidewall, it is extremely well known to include such a component in a runflat tire in order to improve runflat durability while contributing to the reduction of tire weight, as show for example by either one of Nishikawa '840 (Column 2, Lines 55-65 and Figure 3) or Nishikawa '604 (Column 1, Line 64+ and Figure 1). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include a rubber filament composite in the sidewall of Corvasce.

7. Claims 3, 5, 8-11, 21, 30-32, 34, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa in view of Wideman and Corvasce. Halasa is directed to a runflat tire construction in which the runflat insert is formed of a composition in which at least 40% by weight is a conjugated diene elastic polymer (e.g. styrene butadiene) having a weight average molecular weight in a range of 300,000 to 700,000 (Paragraphs 52 and 80). In this instance, though, the reference is completely silent as to the vinyl linkage content. In any event, it is extremely well known to form such rubber



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compositions with a high vinyl linkage, such as between 40 and 65%, since they provide a high degree of stiffness and provide desirable cure characteristics, as shown for example by Wideman (Column 1, Lines 20-35). Furthermore, Corvasce recognizes the particular use of such high vinyl polymers in the manufacture of runflat inserts (Column 6, Lines 5-10). As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the rubber composition of Halasa with the claimed vinyl linkage content absent any conclusive showing of unexpected results. It is emphasized that polymers (butadiene or styrene-butadiene) having the claimed vinyl content are extensively used in a wide variety of tire applications, including runflat inserts as detailed by Corvasce above. Lastly, it is noted that the vinyl content description in Corvasce is recognized as commonly covering the diene portion when it is a polybutadiene or a styrene-butadiene copolymer.

As to claim 5, the composition of Halasa has a ratio between 2 and 2.5 (Paragraph 78).

As to claims 8-11, Halasa suggests the incorporation of a coupling agent, such as tin tetrachloride, at the end or near the end of polymerization (Paragraph 11). The reference additionally states that the amount of coupling is highly dependent upon the quantity of coupling agent employed (Paragraph 12). One of ordinary skill in the art at the time of the invention would have been to appropriately select the desired amount of coupling depending on the specific filler makeup (silica) and the specific base rubber composition. Additionally, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed amount of coupling.

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With respect to claim 21, Halasa describes a rubber composition having a branched structure (Paragraph 42).

As to claims 30-32 and 34, Halasa suggests the use of carbon black, silica, or a combination of carbon black and silica (Paragraph 40).

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa, Wideman, and Corvasce as applied in claim 31 above and further in view of Gorce. The combination of references are applied in the same manner as set forth in Paragraph 3 above.

9. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa, Wideman, and Corvasce as applied in claim 30 above and further in view of Muraoka. The combination of references are applied in the same manner as set forth in Paragraph 4 above.

10. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa, Wideman, and Corvasce as applied in claim 3 above and further in view of Matsuo. The combination of references are applied in the same manner as set forth in Paragraph 5 above.

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Halasa, Wideman, and Corvasce and further in view of either one of Nishikawa '840 or Nishikawa '604. The combination of references are applied in the same manner as set forth in Paragraph 6 above.

***Response to Arguments***

12. Applicant's arguments filed August 24, 2005 have been fully considered but they are not persuasive. Applicant argues that the cited references nowhere teach or suggest at least one of SBR or modified SBR and a content of vinyl linkage of 40 to 65 % in conjugated diene units. As set forth above, Corvasce expressly teaches the use of polybutadiene and styrene butadiene copolymers. In describing the polybutadiene, the reference teaches a vinyl content between 35 and 90 percent in conjugated diene units. While the reference fails to expressly state that such a vinyl content is applicable to the diene as polybutadiene and styrene-butadiene, it is well recognized in a wide variety of industries that the vinyl content is commonly described to cover the diene as a homopolymer (polybutadiene) or a copolymer (styrene-butadiene). This is evidenced by Cohen and Kitagawa. Thus, one of ordinary skill in the art at the invention would have understood the teachings of Corvasce to include a styrene-butadiene copolymer having a vinyl content in accordance to the claimed invention. It is emphasized that the vinyl content is a property of the diene portion, whether used alone or in combination with an additional component (e.g. styrene). Nakakita (JP 08175210, newly cited) is additionally cited to evidence the known use of styrene-butadiene copolymers having the claimed vinyl content for sidewall rubber layers (Abstract).

In regards to Table 9, the results are not seen to be a conclusive showing of unexpected results in that the runflat composition of Corvasce does include a styrene-butadiene copolymer having a vinyl content between 35 and 90 percent in conjugated diene units (as detailed above)- one of ordinary skill in the art at the time of the

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invention would have expected said composition to exhibit the same properties and characteristics as the composition listed in the above noted tables.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

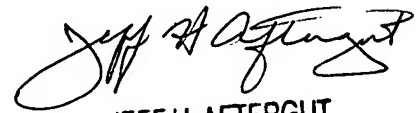
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Justin Fischer

October 6, 2005

  
JEFF H. AFTERGUT  
PRIMARY EXAMINER  
GROUP 1300